

THE VAIL HABITATION AND KILL SITE: IMPLICATIONS FOR PALAEO-AMERICAN BEHAVIOR AND BAND SIZE

by
Richard Michael Gramly

Seven conjoined fluted points linking the Vail Palaeo-American encampment and presumed kill site in the Magalloway Valley, northwestern Maine highlands are evidence that six tent-sites were occupied seasonally by a band of hunters who likely pursued caribou. After nine consecutive occupations the herd was nearly annihilated and the Vail band departed from the Magalloway Valley, perhaps with the expectation of returning after the herd had regenerated.

Background

The Vail fluted point site, Oxford County, northwestern Maine Highlands (map, Figure 1) became known to New Englanders in 1979. During initial archaeological excavations in 1980 eight (8) PalaeoAmerican habitation loci or "tent-locations" were observed (Gramly 1982). Also, a presumed kill site (Vail kill site #1) was discovered west and upwind of the Palaeo-American encampment. It lies on the opposite shore of an ancient channel of the Magalloway River and bordering a small stream that feeds into the river (aerial photo, **Figure 2**). The kill site was explored in 1980, again in 1984 (Gramly 1984), and most recently during 2003 (Gramly 2005a). Since 2004, a high stand of man-made Lake Azischohos has prevented additional explorations.

Thirteen flaked stone artifacts have been recovered from Vail kill site #1. All are projectile points, as follows: (see accompanying photographs and line drawings)

- a) An unbroken, unresharpened fluted point of yellow-brown chert (jasper), V.5581, Figures 4A and 8;
- b) An unbroken, but heavily resharpened fluted point of gray-green Normanskill (?) chert, V.5580, Figures 4B and 9;
- c) An unbroken, but heavily resharpened fluted point of dark gray and olive chert - perhaps Normanskill chert, V.5578, Figures 4C and 10;
- d) A heavily resharpened fluted point, missing an ear, made of tan and gray-green Normanskill (?) chert, V.5579, Figures 4D and 11;
- e) Tip/medial section of fluted point of olive-brown chert, perhaps Normanskill chert, V.5583, Figures 5E and 12;
- f) Tip section of fluted point of tan chert, V.5582, Figures 5F and 13;
- g) Tip section of fluted point of olive and green Normanskill (?) chert, V.5585, Figures 5G and 14;
- h) Tip section of fluted point of olive-tan chert (Normanskill chert?), V.9034, Figures 5H and 15;
- i) Large medial section of fluted point of tan chert, V.5584, Figures 6I and 16;

- j) Large medial section of fluted point of tan and gray-green Normanskill chert, V.13027, Figures 6J and 17;
- k) Large medial section of fluted point of tan chert, V.5586, Figures 6K and 18;
- l) Short medial section of fluted point of gray-green chert, V.13026, Figures 6L and 19;
- m) Basal/medial section of thin, collaterally-flaked Palaeo American lanceolate point of severely weathered, pale gray felsite, Figure 7.

Artifacts a-l pertain to the early Palaeo-American Vail site and its habitation loci; while, artifact m, perhaps 2,000 years later in age (Petersen *et al.* 2000), was left by a Palaeo-American hunter of the Lanceolate Point Tradition who briefly occupied a knoll immediately north of the Vail encampment (site map, **Figure 3**).

Conjoined Artifacts

At the conclusion of the 1980 excavation we observed that all eight (8) loci at the Vail site had the same range of tool-forms but that two loci had much less lithic debris than the others. Loci G and H (site map, **Figure 3**), each yielded only a few hundred tools and debitage items; while, at other loci many hundreds, even thousands, of specimens were counted. These differences might be explained if Loci A-F had been occupied repeatedly, perhaps during successive yearly visits to the Vail site, and if Loci G and H were occupied but once. Loci G and H had little relief and lay close to the ancient channel of the Magalloway River; we noted that they were liable to flooding during heavy rains. Locus F, tool lay on the brink of the ancient river channel and may have been an unsuitable camp during extremely wet weather. Since this habitation locus had more artifacts than Loci G and H but fewer than Loci A-E, it seemed plausible that it was inhabited upon several occasions - but likely not for the full span of visits to the Vail site. Later, the inhabitants of Locus F appear to have "doubled up" with the occupants of Locus E, which is bi-lobed and has an unusually high count of artifacts. That Palaeo-Americans adjusted locations where their tents stood, seeking optimal placements given adverse weather and other unknown factors, should not be surprising to any seasoned camper.

The number of repeatedly occupied loci at the Vail site is six, which are arranged along an arc with a cross measurement of 100- 110 m. The question may be posed: Were all six inhabited during every visit by Palaeo Americans to the Vail site? Early in our analysis of the Vail site assemblage, when conjoined fragments of fluted drills were found to link widely separated habitation loci, we argued that at least two tents stood during visits (Gramly 1982, 1985). Not until 2001, however, did evidence come to hand supporting the idea that all six loci were occupied simultaneously.

In that year two medial fragments of fluted projectile points (V. 13 02 6 and V. 13 02 7) were discovered at Vail kill site #1 by Maine resident, John Halunen (photograph, **Figure 20**) who boldly ventured out upon the exposed and unusually snow-free bed of Azischohos Lake during midwinter. It was possible to conjoin these medial sections to basal fragments that we had recovered during 1980 excavations at the habitation site. A basal fragment from Locus F fitted V. 13 026; while, V. 13027 fitted an "ear" that had been catalogued from Locus E (**Figure 6J** and **L**) and another ear from the site's surface found by a sportsman.

These two refitted fluted points were welcome additions to a group of five others linking kill site #1 with the Vail habitations. Found in the 1970s and 1980s, these other five fragments from the kill site (V.5583, V.55829 V.55859 V.9034, and V.5586) matched pieces from Loci A, D, B, B, and C respectively (see **Figures 5** and **6**). Few Palaeo-American sites have been cross-linked by conjoined artifacts (but see the Murray Springs Clovis locality, Haynes and Huckell 2007), and no pair of sites has more conjoined artifacts linking them than the Vail encampment and its kill site.

All six repeatedly occupied tent loci are represented among the group of seven conjoined points linking the habitations and kill site. Tent locus B is represented twice. Such a complete spatial linkage for so small an artifact sample implies parity of opportunity among the various households of Vail hunters. More specifically, we surmise that 1) households of hunters damaged or wore out their equipment at the same rate, 2) the skill levels of the Vail hunters were compatible, and 3) every household had equal and unrestricted access to the killing ground upwind of the encampment. Going another step, we might

argue that if the number of active hunters living in each tent were nearly the same, then **all six tents were occupied at the same time.**

The size of the band of fluted point-using hunters at the Vail site may be reckoned as the number of people who could be accommodated within six tents. Our excavation of a well-preserved tent locus at the Adkins fluted point site (Gramly 1988), just a kilometer south of Vail, provides an estimate of the number of Palaeo-Americans who might have been accommodated within a tent, which is 6-10 (depending upon their age). Thus, the Vail site's seasonal population might have been 3660 persons. To this figure, one presumes, must be added an unknown number of dogs.

A patri-lineal and patri-local group of 36-60 individuals with a modal size of 48 conforms very well to Williams' hypothesized exogamous lineage-band (1974: 29). The Vail band would have been large enough to furnish marriage partners to neighboring Palaeo-American bands and, predictably, to have sustained new and old generations. In a group of this size cultural and technological traditions could have been perpetuated seamlessly.

Evidence of Band Size at Other Northeastern Palaeo-American Sites

Fifteen kilometers due north of the Vail site is Wheeler Dam - a long bedrock ridge that would have obstructed or channeled the movements of animals coursing up and down the Little Magalloway River valley (see map, **Figure 1**). Adjacent to this ridge and downwind of it is a group of neatly spaced Palaeo-American habitation loci with fluted points and a wide spectrum of other flaked tools. The Wheeler Dam artifact assemblage is virtually identical to that of Vail, although its suite of raw materials is different. I have argued (Gramly 2005b) that the Wheeler Dam site marks re-entry of the Magalloway Valley by the former Vail band, hoping to try their luck again after a sojourn of unknown duration among the lakes and streams of Maine 150-250 km to the northeast.

Important to note, the number of habitation loci at Wheeler Dam, like Vail, is six.

Farther afield in eastern Massachusetts, near Ipswich, we note the Bull Brook II encampment, which was occupied by users of fluted projectile points. Its six (possibly seven) loci each produced roughly equal numbers of tools/tool fragments representing a wide range of types (Grimes *et al.* 1984). The companion, but much larger, Bull Brook I site also had six habitation loci, which were positioned along an arc. The tool inventories of these six loci are dominated by bifaces. This core group of habitations was surrounded by 30 loci where endscrapers were more abundant (Robinson *et al.* 2009). This hunters' encampment or village appears to have been

neatly laid out. Spatial organization was abetted by a wide expanse of well-drained ground free of physical obstructions. The Vail encampment, by contrast, was constrained by boulders, bedrock, a small stream channel on its northern margin, and the channel of the ancient Magalloway River itself. Nonetheless, it is remarkable that the cross-measurements of the arc of Vail habitation loci and those of Bull Brook I are nearly identical (see **Figure 21**) - a clear indicator of nearly identical populations.

An equivalent size for the Vail and the core Bull Brook I encampments is expected given what we know about the habits of congregated hunters-and-gatherers in the modern day. Among the Tiwi of northern Australia, for example, households of hunters keep their distance (20-30 yards apart) when camped together (Hart and Pilling 1960: 36). The distance is not too great among households, however, to prevent crosscamp conversations at night. Other spatially well-defined encampments are on record for South African and Arctic hunters.

Another Palaeo-American encampment in New England that may have been inhabited by six families of fluted point-users is the Turners Falls Airport site (also known as the Hannemann site), Connecticut River valley, Massachusetts. Test-trenching revealed four regularly spaced loci, and according to excavators it is likely that additional loci will be found (Binzen 2005).

Palaeo-American encampments where all families of a band convened in order to exploit abundant, seasonally available resources appear to be more rare than small sites with evidence of only one or two tents. Much of the year it may have been necessary for a band to remain dispersed across the region - reduced to single families or pairs of families - reuniting only when animals aggregated. Where caribou was the quarry, their movement towards calving grounds and winter quarters would have offered hunters the best chance for a high return (Gordon 1975).

The Caribou Model and Overkill

Erosion caused by floating ice pans and run-off after violent storms have taken a heavy toll of Vail site habitation loci. Only flat-lying Loci G and H, which were occupied but once, have escaped nearly unscathed. These loci yielded 227 flaked stone specimens (Locus G) and 283 objects (Locus H) to us excavators. At Locus G the specimen count may be broken down into 100 flaked tools and 127 debitage items; while, the breakdown for Locus H is 114 and 169 respectively. Using as divisors the median figures for 1) tools, 2) debitage, and 3) tools + debitage at Loci G and H and assuming that these figures represent an average number of objects for each class discarded during a **single seasonal occupation** by a Palaeo-American household - the number of occupational episodes may be estimated.

Divided into the population of stone artifacts from intact and eroded forest soils at the Vail site (13,496 items as of 1994) but minus the tallies for Loci G and H the number of episodes is found to be 45 (based upon tools), 55 (based upon debitage), and 51 (based upon tools + debitage) - see **Table 1**. Of these estimates I prefer the one based solely upon debitage, as at the Vail site such debris is small-sized and appears to have been ignored by modern visitors and collectors. For the larger, more shapely flaked tools, on the other hand, one cannot be certain if they were collected by visitors uniformly and everywhere across the encampment.

Dividing by six - the number of tents that we believe stood at the Vail site during every seasonal occupation - we arrive at **nine seasons of occupation**. This figure is also corroborated by the sum of occupational episodes for each locus, calculated separately.

Hunting must have been very good and the bag of animals dependable for the Vail band to have returned nine times to the Upper Magalloway River valley. The organization of the encampment into an arc of well-spaced tent-loci with the boundary of each habitation area sharply defined (see Gramly 1982 for plots of artifacts within individual loci) indicates that all visits must have occurred within a brief period - likely nine consecutive years.

The question is why this Palaeo-American band abandoned the Vail site, never to return?

Assuming that caribou was the intended quarry of the aggregated Vail band, the valley herd must have been depleted severely by well-armed, skilled hunters during nine consecutive seasons. Overkill, that is to say, hunting in excess of a species' ability to regenerate, may have become a problem. The idea of "Pleistocene overkill" has pervaded archaeological literature since the 1960s when it was presented by Dr. Paul Martin (see, for example, Martin 1963: 70; Martin 1967). His hypothesis has been difficult to test; however, in the case of the Vail site with its linked kill and habitation sites we have evidence that bears upon the issue.

Ethnologists have argued that Eskimo and Indian families with dogs who are heavily dependent upon caribou require an animal per day - 365 per year (e.g., Mallet 1930, Harrington 1952: 125, Burch 1972: 362). If fewer animals are bagged, the deficit must be made up by other game and fish. In addition to meat and fat, caribou in their prime furnish hides, antler and sinews. Without a steady supply of these raw materials, life in an arctic world would be impractical and risky.

For Vail site families lying in wait to ambush passing game, a minimum of six caribou per day was needed for basic nourish-

ment - but setting aside nothing against times of shortage. If the Vail encampment were occupied when caribou were on the move but prior to the cold season and the rut, occupation could have lasted 2-3 months. The duration of the hunt depended, in part, upon constancy of a prevailing wind out of the northwest. Given the uncertainties of wind, weather, and caribou behavior itself, each family at the Vail site may have expected to consume at least 75 animals while waiting in camp. It is reasonable to believe that not fewer than 450 animals were required to sustain the entire band during its annual harvest of the Magalloway herd.

If the opportunity presented itself, the Vail band might have killed enough caribou to satisfy their needs for an entire year. Transporting such a large bag would have posed a problem; some surplus might have been deposited within cache-pits that we have observed at the Vail and Adkins sites (Gramly 2009: Chapter 4 photos). Additional butchered remains might have been left at depots en route to the band's winter quarters. Given the challenges of life in a New World, hunters may have been compelled to maximize their harvest as insurance against unforeseen want. Seen in this light, overkill was a sound strategy as long as new lands with fresh herds remained to be exploited. With no need to conserve, the Vail band might have killed as many as 2,200 animals during each visit to the site, netting them a staggering 200-250 tons of flesh and bone.

Obviously such a large bag could have been attained only during the first years of preying upon the Magalloway Valley caribou herd. After initial heavy slaughter, caribou would have become wary. More critical was the loss of breeding stock. Inevitably, returns to hunters diminished, and during the final (ninth) year of hunting, the harvest might have been small. Such a "boom and bust" cycle must have been familiar to Palaeo-Americans, who anticipated future shortages by reconnoitering another killing ground well in advance of the Magalloway valley herd's (inevitable) annihilation. At the Vail site we may have evidence of searching for a new place to hunt in the form of a few flaked tools made of raw materials that outcrop 200 km away in north-central Maine. Apparently, during a pioneering foray into uninhabited lands, a new lithic source was found.

The number of caribou killed annually by the Vail band lay within the range 450-

2,250 animals, averaging 1,350 of any sex or age. In order to lay out so many butchered carcasses a large piece of ground along the Magalloway River would have been required. The nearly culturally barren swath of sandy soil lying shoreward of the arc of Palaeo-American tent-sites A-F (see Vail site map, **Figure 3**) would have been convenient for this purpose. Observers of caribou-hunting Indians and Eskimo in Labrador during the nineteenth century reported that well over 1,200 animals were harvested each year at lake and river crossings. The shorelines for hundreds of feet were covered with butchered remains (Turner 1894; Grenfell 1909: 210-11; Cabot 1920: 242-3).

At the averaged rate of 1,350 caribou per year, a total of over 12,000 animals would have been slain and processed at the Vail site during the nine years it was occupied. Although estimates of the number of head in a caribou herd vary widely for different regions, herds of 10,000-15,000 seem to be a norm - at least for Alaska (Spiess 1979). The Vail hunters undoubtedly were capable of destroying a herd of that size and of exacting a terrible toll from larger herds. If slaughter were followed by a time of profound environmental change, the Magalloway Valley herd, whatever its size, may have needed decades, perhaps centuries, to recover. In this light it is worth noting that the Vail site was occupied at most 100-200 years after the onset of the Younger Dryas (reckoned as 12,900 calendar years BP), when vegetation was still responding to a cooling climate (Newby *et al.* 2005: 142). Although good fodder for caribou may have been freely available in northern New England and the Canadian Maritimes - as a whole - during the Younger Dryas period (12,900-11,600 calendar years BP), localized, temporary disruptions might have occurred.

Years after the occupation of the Vail site, when a band of fluted point-using Palaeo-American hunters re-entered the upper Magalloway Valley, they must have expected to find a re-generated caribou herd and good hunting. The fact that the six families occupying tents at the Wheeler Dam site north of Vail stayed for only one season is proof of their unfulfilled expectations. It seems to indicate that the Magalloway herd had failed to regenerate in the aftermath of the heavy slaughter at the Vail site - perhaps as a result of a diminished food supply due to a period of unfavorable climate?

Future Research

Accumulating carnage at the Vail site would have attracted scavengers and might have caused the Magalloway herd to shy away from the killing ground. As a result, carcasses may have been gathered up and disposed of within the deep channel of the Magalloway River close at hand. Such "tidying up" of butchered remains has been observed among historic caribou hunters of Labrador. Although the practice of preventing scavengers from gnawing caribou remains has been rationalized by Eskimo hunters as a show of respect to caribou spirits (Rasmussen 1929: 194) savvy hunters might view disposal of carcasses as a wise precaution.

An idea of what might be found within the ancient channel of the Magalloway River is provided by the Meiendorf and Stellmoor sites of northern Germany, which belong to Late Palaeolithic or epi-Pleistocene Ahrensburgian and Hamburgian archaeological cultures (Rust 1937, 1943; Clark 1975: 87-93). There, as at Vail, reindeer were ambushed during their seasonal moves, and bone and antler representing hundreds of individuals were preserved because of deep burial under waterlogged conditions. Among the jumbles of reindeer remains were perishable artifacts, flaked stone tools (some still in hafts), and art objects. In light of these remarkable discoveries and the likelihood that similar finds might one day be made at Vail, future excavators of that site are reminded of Sir Mortimer Wheeler's (Euripedes') admonishment to: "Leave no stone unturned."

Acknowledgements

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Table 1. Estimates of the Number of Occupational Episodes at the Vail Site.

	Tools	Debitage	Tools + Debitage
Median for Vail Loci G&H	107	148	255
Number of Objects for Entire Vail Site but excluding Loci G & H*	4,867	8,119	12,986
Occupational Episodes	45	55	51

* Based upon counts current through 1994 given in Gramly 2005a.

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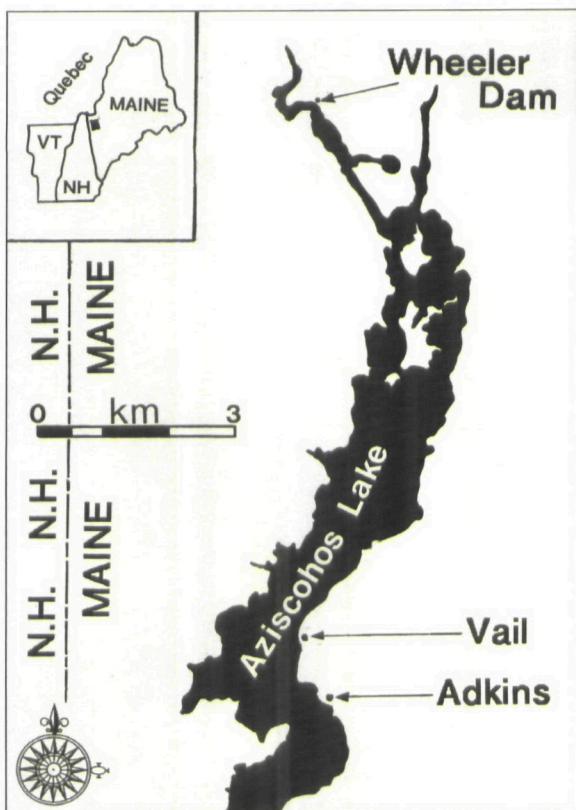


Figure 1.
Location of the Vail, Adkins
and Wheeler Dam sites along
the eastern shore of man-made
Aziscohos Lake, Oxford County,
Northwestern Maine Highlands.



Figure 2. Vail habitation and kill site #1 are located along an ancient, meandering channel of the Magalloway River, which flowed from lower right towards upper left, but now is choked with sediment. The kill site occupies the south bank of a small stream connecting a pond with the ancient river channel. A small Late Palaeo-American campsite (designated "LPL") lies immediately north of the Vail habitations. 1980 photograph, R. M. Gramly.

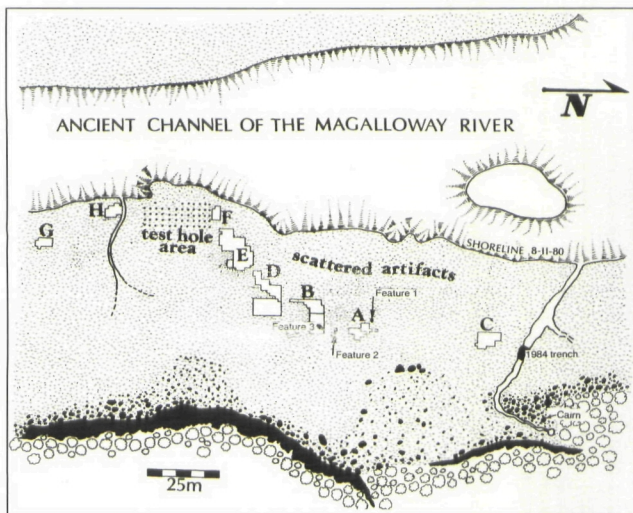


Figure 3.
Map of excavations at the Vail habitation site, 1980-2006, showing locations of Palaeo-American tent-sites or habitation loci A-H, major cultural features (1-3), rock cairn or cache near Locus C, and the shoreline of the ancient Magalloway River as exposed within man-made Aziscohos Lake on 8/11/80. Note the almost barren area shoreward of the arc of tent-sites where only scattered artifacts were found.

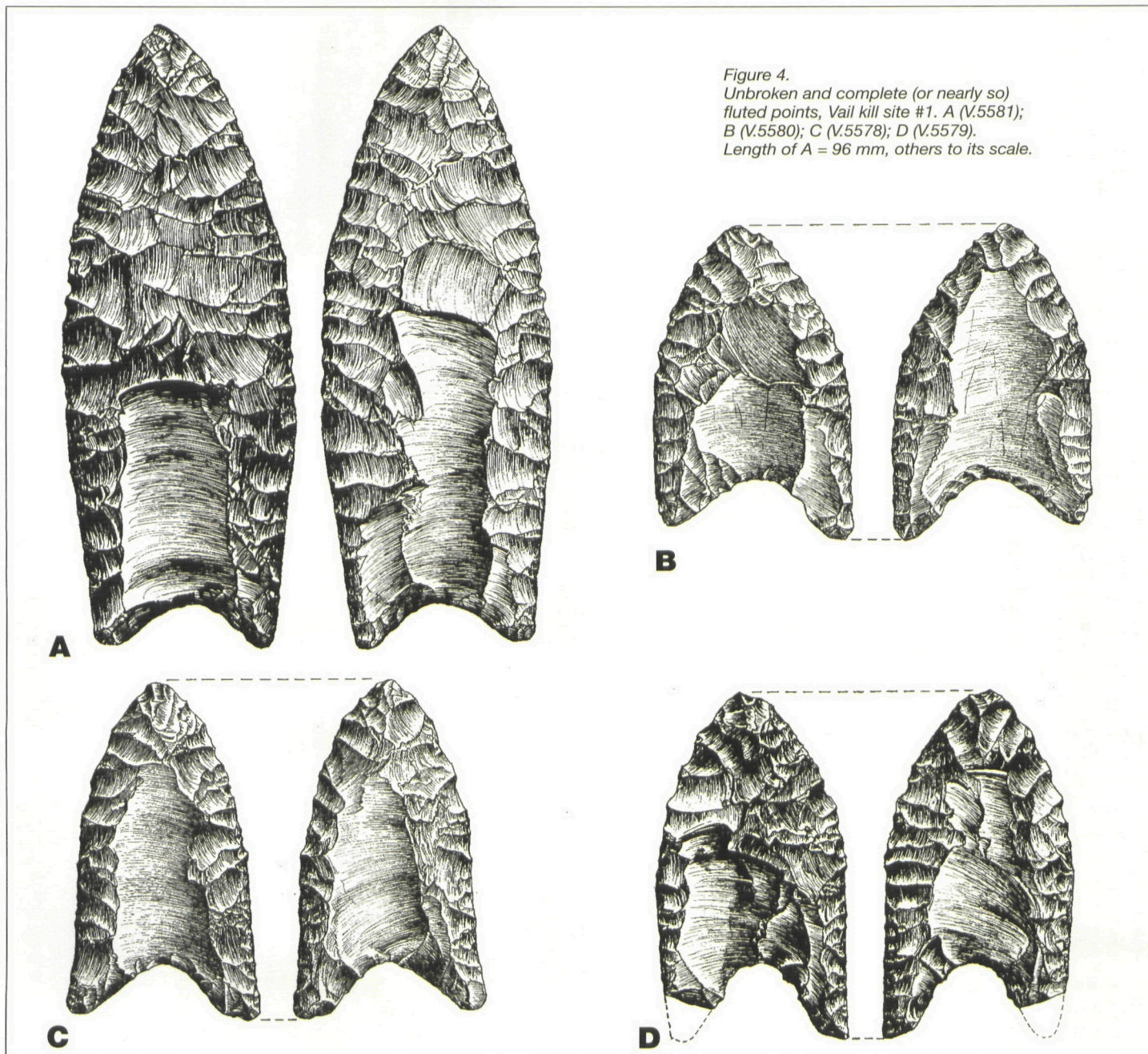


Figure 4.
Unbroken and complete (or nearly so) fluted points, Vail kill site #1. A (V.5581); B (V.5580); C (V.5578); D (V.5579). Length of A = 96 mm, others to its scale.

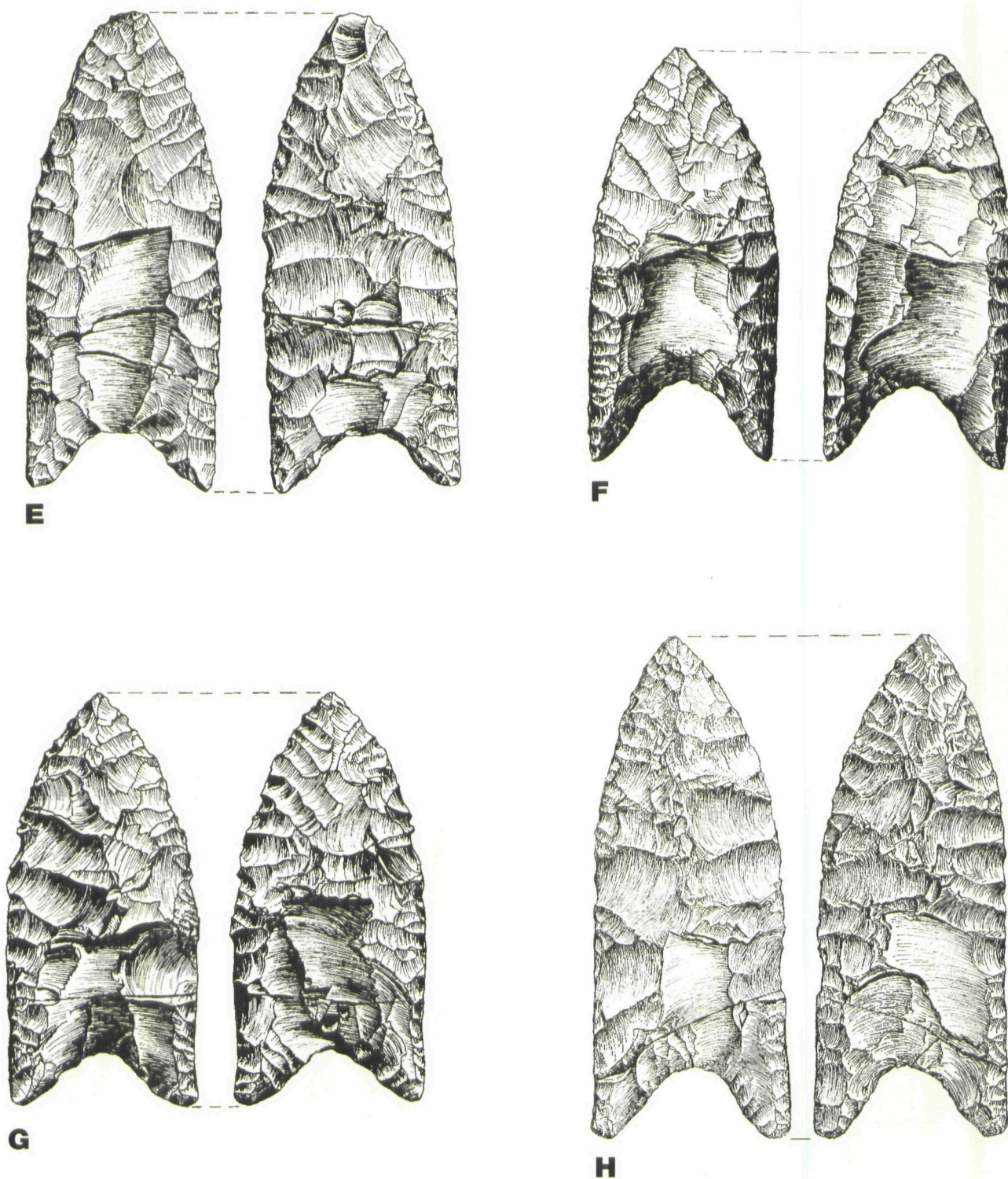


Figure 5. Tip sections from Vail kill site #1 that have been conjoined to basal fragments from loci at the Vail habitation site. E (V. 5583 & base from Locus A); F (V. 5582 & base from Locus D); G (V.5585 & base from Locus B); H (V.9034 and base from Locus B). Length of H = 77 mm, others to its scale.

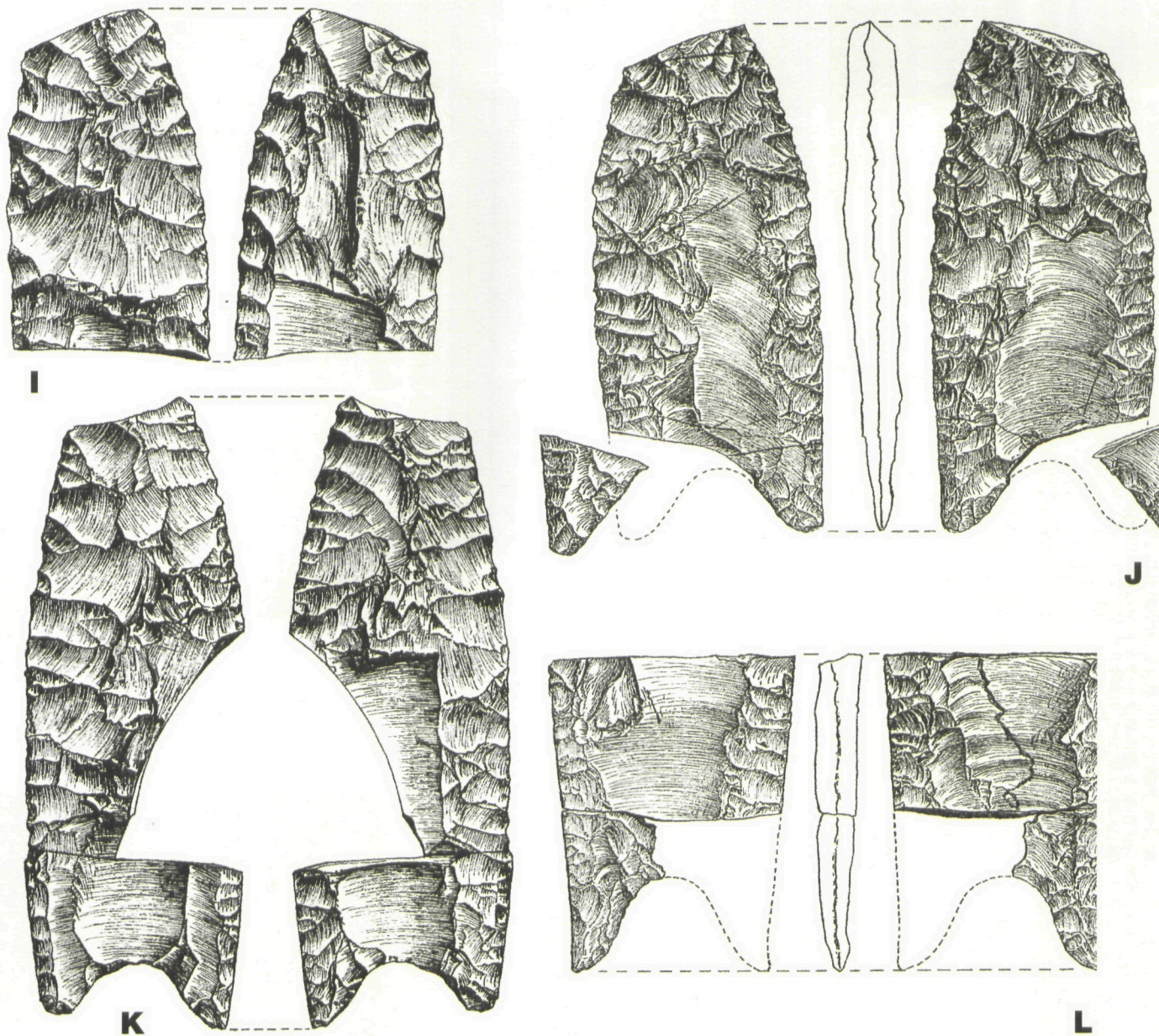


Figure 6. Medial fragment from Vail kill site #1 and other medial fragments from Vail kill site #1 that have been conjoined to basal fragments from loci at the Vail habitation site. I (V.5584); J(V.13027 & base from Locus E); K, (V.5586 & base from Locus Q; L (V. 13026 & base from Locus F). Length of K = 101 mm, others to its scale.

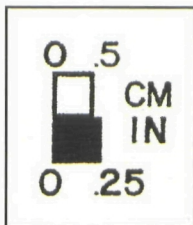


Figure 7.
Basal fragment showing frost-spalling of Late Palaeo-American lanceolate point recovered from Vail kill site #1. This specimen (V. 11489) represents re-use of the kill site nearly 2,000 years after the primary occupation.



Figure 8.
V.5581 - the only intact
and unresharpened fluted
point discovered at the
Vail site. Yellow-brown jasper.
Length 97 mm.



Figure 9. V.5580 - heavily resharpened, formerly
much longer point. Gray-green (Normanskill)
chert. Length 48 mm.



Figure 10.
V.5578 - heavily
resharpened,
formerly much
longer Z:) point
that would be
classed by some
as a "Redstone
type." Dark gray
and olive chert
(perhaps
Normanskill).
Length 52 mm.



Figure 11. V.5579 - extremely heavily resharpened
point with missing ear (ancient break) Tan and
gray-green chert (Normanskill?). Length 56 mm.



Figure 12.
V.5583 & V.7119 - lightly
resharpened fluted
point with impact
fracture to tip.
Weathered olive-brown
chert (Normanskill?).
Length 73 mm.



Figure 13.
V.5582 & V.10787 - much
resharpened point with
deep basal concavity.
Tan and brown-stained
chert. Length 65 mm.

Figure 14. V.5585 & V.8165 & V.8183 - point restored
from three fragments (tip from kill site). Olive-brown
chert (Normanskill?). Length 44 mm.



Figure 15. V.8169 & V.9034 & 13182 - point
restored from three fragments (tip from kill site).
Multi-colored due to weathering in various soils,
but probably Normanskill chert. Length 78 mm.



Figure 16.
V.5584 - medial
section of large
fluted point. Chert
weathered to a tan
color. Length 58 mm.



Figure 17.
V.4121 & V. 13027
& V. 13070
- incomplete fluted
point restored from
three fragments
(medial section from
kill site). Gray-green
Normanskill chert
with one refitted ear
weathered to olive tan
color. Length 84 mm.



Figure 18.
V.2556 & V.5586
- incomplete, large
fluted point (medial
section from kill site).
Olive and tan chert.
Length 102 mm.



Figure 19. V.7419 & V. 13026 - fragmentary but once very
large and elegant fluted point (medial section from kill
site). Olive and gray-green chert (Normanskill). Surviving
length 52 mm. Estimate original length = 6 1/2 inches (165
mm).

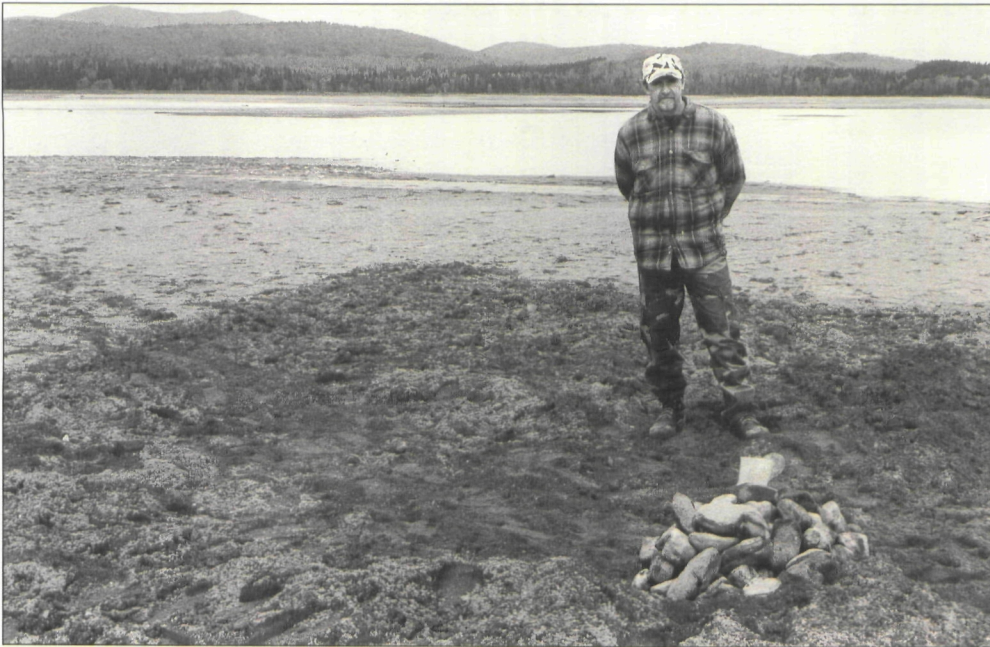


Figure 20. John Halunen, discoverer of V.13027 and V.13026, stands beside a cairn on Vail kill site #1 marking the location of his winter 2001 discovery of V. 13 026 and V.13027. R. M. Gramly photograph, 2002.

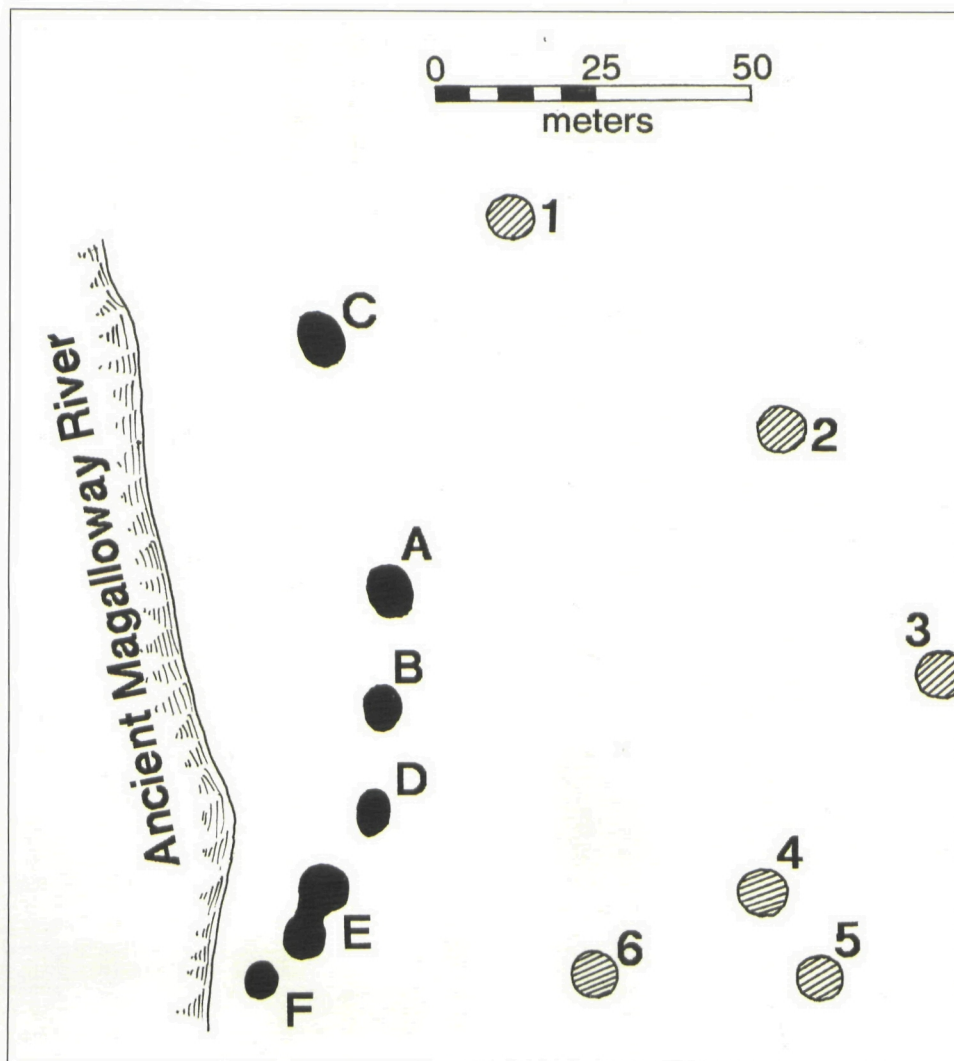


Figure 21. Palaeo-American habitation loci (loci rich in bifaces and other flaked tools) at the Vail site (Loci A-F) and Bull Brook I site (Loci 1-6) after Robinson et al. (2009: Figure 6). The sites are remarkably similar in size and layout.



Figure 22. Excavations at the Vail kill site #1 - September 1980.

Figure 24. Vail point #5502, Vail kill site #1. (Vail habitation site).



Figure 23. Vail point #5581 just after its discovery at the Vail kill site - September 1980.





Figure 25. Rocky shore at Vail Site - September 1980. (Watercolor painting by Marion Stambaugh).



Figure 26.
Artist's conception
of animals being
ambushed as they
cross the small
stream at
Vail Kill site #1.
(Artist Fred Scherer).